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## Abstract

The mass privatization program in Bulgaria was implemented in 1996-97. Following programs in countries like the Czech Republic, more sophisticated regulatory bodies were put into place to prevent the kind of abuses observed elsewhere. This study finds that Bulgaria avoided some of the extreme problems that manifested themselves in these other countries, but there were still serious problems of dilution. Dilution is similar in both mass privatization firms and non-mass privatization firms. Dilution is associated with positive performance, suggesting that more concentrated ownership has had some benefits. Even after a number of years have passed, mass privatization firms have performed less well than firms privatized by other means.

JEL: P5, P3, G3

Keywords: Bulgaria, mass privatization, dilution

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## *Introduction:*

Mass privatization programs have been carried out in many transition countries, including Bulgaria, Russia and the Czech Republic. These programs had several purposes. Given that these countries had very large state sectors, mass privatization provided a means for rapidly privatizing these sectors. Also in countries where citizens had limited resources to buy these state companies, these mass privatization programs provided a means of transferring these assets to the population at large.

In Bulgaria, mass privatization occurred after attempts to use cash privatization and management-employee buyouts provided only limited privatization. The first wave of the mass privatization program, which was the only part that resulted in significant privatization, was completed in June 1997. About one-fourth of Bulgaria's state-owned enterprises (1040) were partially privatized through the program. While this represented less than one-sixth of the estimated assets of the state enterprise sector, the mass privatization program privatized twice as many assets as had been previously privatized through other programs.<sup>1</sup>

Several years have passed since the program was completed, so it is now possible to evaluate the program. We investigate two aspects of the program: (1) How well have the firms that were privatized through the program performed since privatization? Did they perform better or worse than firms that were privatized through other programs i.e. cash privatization, management –employee buyouts, etc.? (2) Did the program succeed in passing valuable assets to the public? Were valuable ownership rights established for new shareholders? This second question is particularly important in establishing the legitimacy of the program since

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<sup>1</sup> See Miller and Petranov (2000) for an analysis of the early outcomes of the mass privatization program.

the program was sold to the public as a means of sharing the wealth that was previously under state control.<sup>2</sup>

While there have been many criticisms of mass privatization programs in other countries, the Bulgaria mass privatization program had several advantages. Because the program was carried out after programs had already been implemented in other countries, the Bulgarians were able to design their program to anticipate some features of the privatization process that had not been foreseen earlier.<sup>3</sup> For example, the Bulgarians had observed the creation of privatization funds (i.e. mutual funds created to participate in the voucher auctions) during the Czech privatization program. The Bulgarians anticipated the participation of privatization funds and established regulatory institutions for licensing and monitoring these funds before the mass privatization program began. They also established a Securities Commission to oversee and regulate the new stock markets. Thus one might see the Bulgarian mass privatization program as a program that had many advantages relative to other similar programs in other countries. Indeed, there are some indications that Bulgarian firms which were part of the mass privatization program performed reasonably well during the years immediately following their privatization. (Atanasov, 2003)

Improved firm performance is, as stated above, only one criteria for judging the success of a mass privatization program. A major reason that privatization programs were so politically difficult to implement was that they involved a transfer of wealth. Events since the program was implemented in Bulgaria provide a mixed picture as to the success in transferring wealth. Of the nearly one thousand firms which were initially listed on the stock exchange, only about a third

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<sup>2</sup> Perhaps, for some citizens, it influences their view of the legitimacy of the entire transition process

<sup>3</sup> In fact the program was underway when some of the worst problems of the Czech program were becoming clearer.

are listed today, and the shares of only a few trade actively.<sup>4</sup> On the other hand, privatization funds collected over 80% of the voucher books and acquired 87% of the shares purchased in the auctions. Of the original 81 privatization funds, around 30 are still listed on the exchange and 15 funds trade actively. These tend to be the larger funds which initially controlled a substantial portion of the shares sold at auction.<sup>5</sup> Thus evaluating the transfer of wealth involves analysis of a complex web of relationships.

The paper is divided into two parts. In the first part we use extensive firm level accounting data for the period 1996 – 2001, and for some firms through 2003, to determine the extent of dilution of share ownership. Using similar investment fund (i.e. holding company) accounting data, we are able to determine the extent of further shareholder dilution that occurred through this second level of potential dilution of shareholder value. We are able to compare the dilution of shareholder value in both mass privatization firms and non-mass privatization firms. We are also able to compare dilution levels in firms that continue to be listed on the Bulgarian Stock Exchange and those firms that are not listed on the exchange. This latter category includes both mass privatization firms that chose to delist from the exchange and firms that did not participate in the mass privatization and never were listed on the exchange. In the second part we investigate the performance of the firms in the mass privatization program. First, we compare the performance of these firms with the performance of firms that did not participate in the mass privatization program. While the mass privatization program was the first major effort

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<sup>4</sup> See Petranov and Miller (1999) for an analysis of the problems in the development of the stock exchange. This monograph also contains an analysis of the early securities' laws and how they were implemented in the early years of the stock market. Atanassov (2005) provides an updated review and shows how later changes in the law were designed to prevent further dilution of the interests of the original voucher shareholders.

<sup>5</sup> The eighteen largest privatization funds controlled 60% of the vouchers in the auctions.

at privatization in Bulgaria that successfully privatized a large number of firms, many other firms were privatized in the following years. (See Table 1.) So this comparison is *not* a comparison between the performance of state firms and private firms but rather between firms that were privatized through mass privatization and firms that were privatized through other methods of which labor-management buyouts and sales to foreign companies were major methods. While we were able to obtain data on the types of ownership of mass privatization firms, we do not have data on types of owners of non-mass privatization firms, so we are unable to compare the performance of, for example, mass privatization firms now owned by foreign interests and non-mass privatization firms that are owned by foreigners.

Table 1

STATE BODIES	Percent of privatized assets in the total amount of the state-owned assets (balance values 31.12.1995)													
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	TOTAL
Privatization Agency	0.32	1.47	0.50	3.53	2.38	1.76	13.99	2.32	0.60	0.99	1.36	2.58	1.51	33.31
All State Bodies	0.37	1.63	1.07	4.09	3.78	4.47	16.96	4.43	0.97	1.16	1.36	2.58	1.51	44.38
Center for Mass Privatization					14.58									14.58
<b>TOTAL</b>	<b>0.37</b>	<b>1.63</b>	<b>1.07</b>	<b>4.09</b>	<b>18.36</b>	<b>4.47</b>	<b>16.96</b>	<b>4.43</b>	<b>0.97</b>	<b>1.16</b>	<b>1.36</b>	<b>2.58</b>	<b>1.51</b>	<b>58.96</b>

Source: Agency for Privatization (Bulgaria)

On the other hand we are able to investigate other issues. In particular, we investigate whether ‘stock manipulation’ through dilution affected firm performance. Dilution will lead to more concentration in the hands of those who have the power to issue additional shares at less than market prices.

## *Data*

The data for both parts of the study came from four sources. Bulbrokers, DAXY, SFB Capital Market JSC and the website of the Bulgarian Stock Exchange. Along with ownership data for the years 1997 and 2001, we were able to obtain balance sheet and income statements on 1033 of the 1040 firms in the mass privatization program for the years 1996 – 2001 from Bulbrokers. They also provided us with accounting and balance sheet data on 4294 firms that did not participate in the mass privatization period for this same 1996 – 2001 period. Because of missing data only 2515 could be used.

Since we were able to obtain a nearly complete set of data for the mass privatization firms for this period, we were able to observe the following trends just on the basis of the data. First, there are no mergers among the mass privatization firms during this period. This was the result of laws that made it more advantageous for a firm to operate as a subsidiary rather than as a merged entity. More liberal laws would have encouraged firms to experiment with more extensive reorganization. Secondly, there were no bankruptcies among these firms during the 1996 – 2001 period. This is surprising since there was a severe financial crisis in 1996-97, and firms were selected for mass privatization before the crisis and the mass privatization auctions took place during the crisis. What the data do show, however, is that there were a number of firms that had negative net worth.<sup>6</sup> While there have been bankruptcies of mass privatization firms more recently, these figures are an indication of the slow progress in developing effective bankruptcy laws in Bulgaria.

Balance sheets and income statements for 2002-3 for mass privatization firms were obtained from the other sources. Statements for listed firms were downloaded from the

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<sup>6</sup> The number of mass privatization firms with negative net worth from 1996 -2001 were: 29,17,32,49,69 and 94; respectively.

Bulgarian Stock Exchange website, for unlisted firms from DAXY and SFB Capital Markets. This gave us an unbalanced panel with 450 mass privatization firms through 2003. Along with this data we also obtained balance sheet data on 66 holding companies for 1997 – 2003. Of these 57 are listed on the Bulgarian Stock Exchange.

### *Dilution*

Following mass privatization programs in several countries managers or shareowners with major stakes in the firms, have attempted to gain control of the firms through various means. Dilution, which we calculate here as the issuing of new shares at level which dilute total equity per share is one means for gaining control of a firm at the expense of the original shareholders. Some dilution is common in most countries. For example, when firms issue options to management and managers purchase shares for less than market prices, dilution occurs. There has been considerable concern about dilution in Bulgaria, however. This is reflected in the passage of changes to the Bulgarian Corporation Law in 2002 that were designed to prevent dilution which would reduce the effective holdings of existing shareholders.<sup>7</sup>

In measuring the level of dilution we employed the following formula to see whether an expansion of the number of shares in any given year, led to a decrease in value per share value. Let  $S_{it}$  be the number of outstanding shares at end of year  $t$  for firm  $i$ , and let  $T_{it}$  be the total equity *per share* at the end of year  $i$  where total equity is adjusted for profits during the year. If  $d_{it}$  is dilution for firm  $i$  in period  $t$ ,

we determine  $d_{it}$  as: :

a) if  $S_{it}=S_{it-1}$ ,  $d_{it}=0$ ;

b) if  $S_{it}<>S_{it-1}$ , then:



- 1) if  $T_{it} > T_{it-1}$ ,  $d_{it}=0$ ,
- 2) if  $T_{it} < T_{it-1}$ ,  $d_{it} = \frac{T_{it-1} - T_{it}}{T_{it}} * 100$ .

We then find the compound impact of these annual dilutions to determine the level of dilution over the entire period.

Since we did not have annual share data, we used changes in shareholder equity as a proxy for the number of shares outstanding since shareholder equity is book value, which rarely changes, times the number of shares outstanding. Because of missing data, our sample was somewhat smaller than the entire sample, but the data set still contains 1011 mass privatization firms and 2521 non-mass privatization firms.

An important question in the Bulgarian context is whether firms listed on the Bulgarian Stock Exchange are less likely to dilute than firms not listed on the exchange. Indeed, Atanasov, et. al. (2005) implicitly assumes that mass privatization firms attempt to de-list so they can dilute.

Table 2 provides information on the level of dilution for various groups. The groups are mass privatization firms, non-mass privatization firms, holding companies.

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<sup>7</sup> These changes included the issuing of warrants to existing shareholders which had to be purchased when new shares are issued. This meant that shareholders could no longer be passive observers during new share issues. For a more complete description of these changes see Atanasov, et. al. (2005)).

Table 2

Firm Dilution Levels  
(Percentage of Firms in Each Decile)

	All Firms 1996-2001 Listed (321)	MP Firms 1996-2001 Unlisted (690)	450 Firms 1996-2001 Listed (255)	MP Firms 1996-2001 Unlisted (195)	450 Firms 1996-2003 Listed (255)	MP Firms 1996-2003 Unlisted (195)	450 Firms 1996-2003 Listed (57)	MP Holding Companies Unlisted 1996-2003 (9)	Non-MP Firms 1996-2001 Listed (6)	Non-MP Firms 1996-2001 Unlisted (2515)
No dilution	64.2	62.3	60.0	55.9	55.3	46.2	52.6	77.8	83.3	68.0
>0%	35.8	37.7	40.0	44.1	44.7	53.8	47.4	22.2	16.7	32.0
>10%	32.7	33.0	35.7	36.9	40.8	46.7	42.1	11.1	16.7	28.3
>20%	31.2	28.0	33.3	30.8	38.8	40.5	31.6	11.1	16.7	25.8
>30%	27.4	25.4	29.4	25.1	34.5	35.9	26.3	11.1	16.7	23.1
>40%	22.7	21.3	25.5	20.5	29.8	29.2	19.3	11.1	16.7	20.4
>50%	18.7	16.1	21.2	15.9	27.1	24.1	14.0	11.1	16.7	17.6
>60%	15.6	11.4	18.0	11.3	22.7	19.0	7.0	11.1	0.0	14.7
>70%	11.2	8.0	12.9	7.2	16.5	14.4	1.8	0.0	0.0	11.5
>80%	5.9	4.2	7.1	4.1	9.4	8.7	1.8	0.0	0.0	7.8
>90%	2.5	2.2	3.1	2.1	5.5	3.1	0.0	0.0	0.0	3.4
Average of all firms	0.19	0.17	0.25	0.25	0.21	0.18	0.17	0.066	0.09	0.17
St Dev of all of firms	0.29	0.27	0.33	0.31	0.31	0.27	0.23	0.194	N/A	0.30
Average of all diluting firms	0.52	0.45	0.56	0.46	0.52	0.40	0.35	0.328	0.56	0.53
St Dev of all of diluting firms	0.26	0.27	0.28	0.29	0.28	0.27	0.22	0.407	N/A	0.30

Bold columns are firms that are listed on the BSE,  
Columns that are not bolded are firms that are not  
listed.

Numbers in parentheses are number of firms in each group.

Because we have an unbalanced panel where we have two years of additional data for the 450 mass privatization firms, we have identified this group separately. For purposes of comparison, we show the level of dilution for these 450 firms for both 1996 -2001, so they can be directly compared with the other firms in the sample, and also for 1996 – 2003. As can be seen by comparing the 1996-2001 column with the 1996-2003 column for mass privatization firms, dilution continued after 2001.<sup>8</sup> There are two columns for each group. The first column in bold is for the listed companies. The second column is for unlisted companies in each group. For completeness we have included unlisted holding companies and listed non-mass privatization firms, even though there are very few companies in these two categories.

To provide a better sense of the distribution, the level of dilution is broken down into deciles. If a firm dilutes its shares by 50%, this means that the firm has doubled the number of shares outstanding without increasing the total equity in the company. A dilution level of 90% means that the firm has increased the number of shares by a factor of ten without increasing total equity.

The first row in the table is the percentage of firms in each category which did not dilute at all. As can be seen in the table, through 2001 less than half of all firms and holding companies in each category diluted at all. (By 2003, 53.8% of our subsample of unlisted mass privatization firms had some level of dilution.)

The second row in the table is the percentage of firms in each category which had some level of dilution. The third row is the percentage of firms that diluted by more than 10%; the fourth row is the percentage that diluted by more 20%, and so on. While many firms had some

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<sup>8</sup> Atanasov, et. al. (2005) argues that the legal changes in 2002 reduced the amount of dilution. We can neither confirm or deny this since our sample does not extend far enough beyond the implementation of these changes.

level of dilution, only a small number of firms diluted their shares over 90%, rendering the original shares nearly worthless.

If we compare the actions of mass privatization firms and non-mass privatization firms, using t-tests and F-tests we cannot reject the null that the means and variances of the two distributions are the same at the 1% level. Thus it appears that as a whole, the two sets of firms have very similar dilution behavior.

Similar results apply if we look at the relationship between unlisted mass privatization firms and unlisted non-mass privatization firms i.e. we cannot reject the null that the means and variances of the two distributions are the same at the 1% level.<sup>9</sup> From Table 2 one can also see that a lower percentage of non-mass privatization firms diluted, but many unlisted mass privatization firms diluted less than 10%. In fact when we sum the firms that did not dilute at all and those that diluted less than 10%, the probability of dilution is almost identical for the two groups of firms. So it appears that these two groups of firms had about the level of dilution.

If one focuses on the relationships between listed and unlisted companies in the same category (i.e. all mass privatization -2001, 450 mass privatization -2001, 450 mass privatization -2003), it is clear that unlisted firms were more likely to dilute than listed firms.<sup>10</sup> Still if we compare the means and variances of all firms in each group (including those that did not dilute), using t-tests and F-tests we find that we cannot reject the null that the means and variances of the two distributions are the same at the 1% level (except for the means of the all mass privatization firms which cannot be rejected at the 5% level.)

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<sup>9</sup> There are too few listed non-mass privatization firms to make statistical comparisons between listed mass privatization and non-listed mass privatization firms.

<sup>10</sup> Because the number of listed non-mass privatization firms and the number of unlisted holding companies is so small, reasonable statistical comparisons between listed and unlisted cannot be made for these categories.

In spite of this, listed firms tended to dilute *more* than unlisted firms. When we look at firms that diluted, we find that the means of listed and unlisted firms are significantly different for each group at the 1% level (and different at the 5% level for the mass privatization firms - 2001). The pattern here is illustrated in Figure 1. The graph shows the *difference* in the percentage of firms that diluted at the different decile levels for all mass privatization firms, and our subgroup of 450 firms for the periods ending in both 2001 and 2003. For all three groups, the percentage of firms in the listed group is larger than the unlisted group as the level of dilution gets beyond 40% or more.

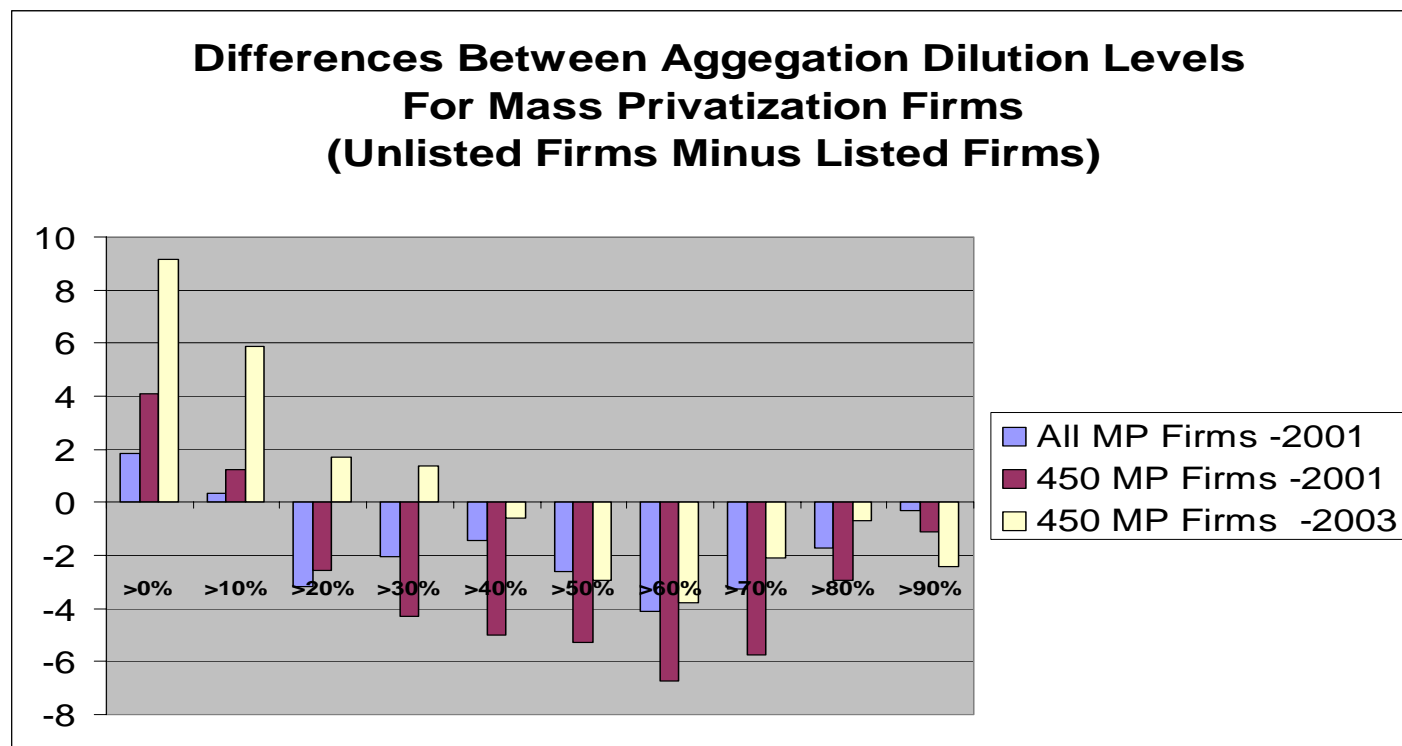
Since 80% of the original mass privatization vouchers were placed with holding companies, the dilution behavior of holding companies is also important from the standpoint of individual investors. If these funds also dilute their shares, then individual investors are subjected to a kind of ‘compound dilution’ where both the individual companies and the holding companies could be diluting their original ownership stake.

The level of dilution by holding companies is also described in Table 2. The level of dilution is calculated for the period through 2003. At that point almost half of the holding companies had some level of dilution. Dilution by holding companies tended to be less than firms, however, with many holding companies diluting their shares by less than 20%. Among the larger holding companies there was also variance in the levels of dilution. For example, Doverie, the largest holding, and Albena, which invested heavily in the popular Albena resort, did not dilute at all. On the other hand, Multigroup (later called Em Dzhi Elit Holding AD) which had well known mafia connections, diluted by 68%.<sup>11</sup>

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<sup>11</sup> At the time of the auctions some people were said to have purchased Multigroup shares because they thought it would be good to have the mafia on their side. They were clearly mistaken in this view!

Figure 1



*Summary:*

The evidence on dilution supports the notion that while dilution has been widespread in Bulgaria during the period from 1996 to 2003, the majority of firms did not engage in any dilution; a few others issued so many shares that original shareholder stakes are now worthless. A comparison of dilution levels among various groups (mass privatization listed, mass privatization delisted and non-mass privatization firms) does not indicate that any of these groups have a significantly higher levels of dilution than the others. This is somewhat of a surprise since there have been suggestions (e.g. Atanasov, et. al. (2005)) that delisting and dilution go hand-in-hand. In some instances further dilution took place in the holding companies, but it was also more limited than might have been expected given what happened in

the Czech Republic after the mass privatization program there, but disappointing given the extra safeguards that had been put in place at the initiation of the Bulgarian mass privatization program.<sup>12</sup>

*Performance:*

Questions of relative efficiency gains from privatization have been extensively studied in the literature. Djankov and Murrell (2002) provide a survey of the literature on privatization in transition economies. They find that the “(e)conomic effects (of privatization) are quite often very large, for example adding several percentage points to enterprise growth rates. The privatization effect is, however, statistically insignificant in the Commonwealth of Independent States (CIS).” (p. 740) They also find that performance varies depending on the new ownership type, with investment funds, foreign owners and large controlling block holders producing significant restructuring.

Atanasov (2003) analyzed the situation in Bulgaria using data from 1997 -1999. He compares firms controlled by the State, privatization funds, foreign owners, management and employees and dispersed owners. He found that privatization funds and firms with dispersed ownership, which would capture many firms that participated in the mass privatization program, performed reasonably well. Their performance was better than the performance of State firms or firms controlled by management and employees. Over several dimensions their performance was comparable to firms owned by foreign owners, although they had more limited access to outside financial resources.

Our approach is somewhat different than Atanasov’s. We focus more on the questions of whether the mass privatization firms performed better than the firms that were privatized (or not privatized) by other means. We first compare the performance of mass privatization firms

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<sup>12</sup> The term ‘tunneling’ is often associated with the experience with Czech holding companies. See

and non-mass privatization firms. Then we compare the performance of mass privatization firms only by ownership type. For example, we ask whether firms where the state retained a significant holding perform better or worse than firms that were purchased by privatization funds (holding companies)? Unfortunately we do not have ownership data on non-mass privatization firms so we cannot compare the performance of mass privatization firms with a particular ownership structure with non-mass privatization firms with a similar ownership structure.

We use two measures to evaluate the performance of mass privatization firms: return-on-assets and sales per unit of labor cost ( sales/ wage bill). We do not have employment data so we use sales per unit of labor cost as an alternative. Table 3 summarizes the data for both these measures for both the entire sample of firms and the subsample that includes only the mass privatization firms. It also provides data summaries for dilution the major right-hand side variable in our equations.

Table 3

### Data Summaries

Variable	Mean	Std.Dev.	Minimum	Maximum	No. of Observations*
<i>Entire set of firms</i>					
ROA	-0.04698	0.6702	-29.735	4.9770	13747
SALES/WG	4049	98418.5	.00571	9600500	13204
DILUTION	0.0315	0.1370	0	0.99448	13747
<i>Only Mass Privatization Firms</i>					
ROA	0.0644	0.2242	-1.4510	4.97700	5964
SALES/WG	21.709	434.24	0.31230	21188.33	5360
DILUTION	0.3290	0.1354	0	0.9939	5360

Note: The variance in the number of observations reflects missing data for certain variables in for different regressions.

\* These numbers reflect the number of observations in the entire unbalanced panel over several years.



### *Impact of Mass Privatization*

In measuring the impact of mass privatization the basic equation we use is:

$$Y_{it} = \alpha_i + P_{it} \beta_t + X_{i\ t-1} \gamma + D_{it} \delta + \varepsilon_{it}$$

where  $Y_{it}$  is a measure of firm performance,  $P_{it}$  is the treatment variable equal to 1 if the firm was part of the mass privatization (or in later equations if the firm acquired certain ownership characteristics),  $X_{i\ t-1}$  is the level of performance variable lagged one period.  $D_{it}$  is the level of other variables that might affect firm performance. Having calculated dilution levels for each firm, we are also interested in determining whether dilution may affect firm performance.  $\beta_t$  are the key parameters of the model. They measure whether, for example, firm in the mass privatization program performed differently than firms that were not.

The State determined whether the firm was part of the mass privatization program; whether or not to dilute was determined by the firm. We used the Wald test to determine whether dilution and the lagged value of the righthand side performance variable should be considered endogenous. We reject the possibility that they are exogenous so we used two-stage least squares.

We used  $X_{i\ t-2}$  and  $X_{i\ t-3}$  to instrument the lagged dependent variable. We chose shareholder equity and size (based on total equity) of the company to instrument for dilution. Check of the Hausman test for all equations supported the use of a fixed effects model. The results are presented in Table 4.

The results are mixed. Being part of the mass privatization program does not have any significant effect on sales per unit of labor cost, but mass privatization firms did perform significantly less well than non-mass privatization firms with regards to return-on-assets. What is most disturbing, perhaps, is that this continues into 2002 and 2003. There was substantial

privatization during the period 1998 – 2000. This privatization took the form of labor-management employee buyouts, which were severely criticized as sweetheart deals to managers and politically connected individuals, and sales of large firms to foreign interests. Thus comparing the performance of mass privatization firms with non – mass privatization firms in 2002 and 2003 more or less reflects a comparison between firms privatized through mass privatization versus firms privatized by various other means during the preceding period. The negative coefficients suggest that these other methods, granting that they reflected a variety of other approaches to privatization, as a whole generated a better return for their owners.

Table 4

Performance of Mass Privatization Firms

Dep. Var.	ROA	SALES/WG
DILUTION	1.4932** (1.982)	-1343.35 (-0.034)
MP1997	-0.2241*** (-9.300)	824.67 (1.033)
MP1998	-0.1064*** (-2.064)	273.28 (0.106)
MP1999	-0.1348*** (-3.451)	227.56 (0.123)
MP2000	-0.1058*** (-3.167)	236.86 (0.151)
MP2001	-0.1146*** (-2.765)	267.67 (0.129)
MP2002	-0.1641*** (-4.832)	286.04 (0.111)
MP2003	-0.2014*** (-5.139)	251.22 (0.134)
F =	1.17	2.25
Adj R2 =	0.045	.28379

t- statistics in parentheses, \*\*\* significant at 1% level, \*\* significant at 5% level, \*significant at the 10% level

We also tested in both equations whether dilution had an impact on performance. Again the results were mixed: insignificant in the sales per unit of wage cost equation and significantly positive in the return-on-assets equation. The positive coefficient in the return-on-asset equation may suggest that the greater concentrated ownership resulting from dilution may have had a positive effect on performance.

### *Impact of Ownership*

Since we have ownership data for mass privatization firms, we were also able to ask the question whether ownership made a difference *within* the group of firms that were part of the mass privatization program. Our procedures for determining the impact of ownership are similar to those above. We investigated whether different levels of dilution had an impact across the firms and using dummy variables for the various ownership types, we asked whether concentration of different forms of ownership had an impact on performance. We looked at six categories of ownership: state ownership, foreign ownership, ownership by privatization funds, ownership by a private individual (or perhaps another firm), ownership by labor-managers and dispersed ownership. Where possible we looked at two ownership levels: 34% and 50%. In the case of foreign ownership and labor-managed ownership there were so few firms in the 34 – 49% range, we combined these categories into one 34% and above category.

While 50% signals full majority control, 34% was also chosen because, under the commercial code, significant decisions require a two-thirds majority. So a 34% ownership level represents a ownership holding large enough to block major decisions. Under special legal provisions, the State can exercise control if it holds at least 34%. During the mass privatization program the State retained this level of control over many of the large firms that participated in the mass privatization program. (Miller and Petranov, 2000)

Table 5 presents our results for the evaluation of the ownership impact on performance.

Table 5

Ownership Effects

Dep. Var.	ROA	SALES/WG
DILUTION	0.6249 (1.043)	-337.11 (-.197)
STATE50	0.1158*** (5.024)	-4.43 (-.075)
STATE34	0.0429** (2.024)	0.2032 (0.006)
PRIV50	0.0421** (2.506)	5.18 (0.151)
PRIV34	0.0217 (1.132)	5.60 (0.147)
FOREIGN	0.0528* (1.935)	16.62 (0.204)
LAB-MANG	0.0814** (2.517)	-0.6958 (-.014)
INV FUND50	0.0512** (2.196)	7.67 (0.185)
INV FUND34	0.0403*** (2.888)	0.5714 (0.029)
DISP50	-0.0307 (-1.356)	-70.96** (-2.004)
DISP34	-0.0033 (-0.115)	-4.38 (-0.078)
F=	.92	3.84
Adj R2 =	- 0.01775	0.35059

t- statistics in parentheses, \*\*\* significant at 1% level, \*\* significant at 5% level, \*significant at the 10% level

The results for the sales per unit of labor cost measure are largely insignificant. Only firms which have highly dispersed ownership show any difference from undefined ownership. High levels of dispersed ownership perform more poorly. This is not a surprise. Before the mass privatization program went forward, there were concerns that if ownership were too dispersed, managers would not be properly supervised by owners. As it has turned out,

however, this group (over 50% dispersed ownership), makes up only 5% of the total sample. A major reason for this is that privatization funds (now investment fund holding companies) were such large players in the original auctions. For example, investment funds hold 34% or more of the shares in 14% of the firms in the sample.

The impact of ownership on return-on-assets is larger and more differentiated. Firms that are controlled by investment fund holding companies perform significantly better than the undefined ownership group. State firms, labor-managed, foreign firms and firms held by private individuals (when the stake is over 50%) also perform significantly better than the undefined group. Firms with high levels of State ownership tend to be large firms. The State was hesitant to relinquish control over these so it is not a surprise that they perform well. Foreigners were not permitted to bid directly in the auctions but gained control of firms by buying shares directly from privatization funds (investment funds) who acted as their agent in the auctions. (Miller and Petranov, 2000) Foreign firms that were interested in investing in Bulgaria also had other options later as the State sold many of larger firms in cash sales in the years following the mass privatization auctions.

As in the earlier equations where we tested the impact of dilution over the entire set of firms, we tested for the impact of dilution here as well. It is not a significant factor effect performance in either equation. Here we are also including concentration of ownership of various types so the insignificant coefficient on the dilution variable may be caused by the fact that we are picking up concentration of ownership through the other variables in the equations. .

## *Conclusion*

The mass privatization program in Bulgaria was implemented during the crisis years of 1996-97. Occurring later than the mass privatization programs in countries like the Czech Republic, more sophisticated regulatory bodies were put into place to prevent the kind of abuses that had been observed in these earlier programs.

With these better institutional arrangements Bulgaria was able to avoid some of the extreme problems that manifested themselves in these other countries. Still there were serious problems of dilution, and later revisions to the law were passed to try to cope with these abuses. Interestingly, the problem of dilution is similar in mass privatization firms and non-mass privatization firms so the problem of dilution is not simply a function of the mass privatization program.

When viewed from the perspective of performance, dilution does appear to have had an impact on performance, suggesting that the more concentrated ownership associated with dilution has had some positive benefits, even though it has also had an important downside, shifting wealth away from the original owners into the hands of a few.

To the extent that the mass privatization program was an attempt to distribute wealth to the general population, it was only partially successful. Many firms did not dilute, but a small percentage of firms diluted shares dramatically.

Our analysis compared the performance of mass privatization firms to those firms that were not privatized through the mass privatization program. Here the results are mixed. There appears to be no difference with respect to sales per unit of labor costs, but the performance of mass privatization firms with respect to return-on-assets is significantly worse than non-mass

privatization firms. Even after a number of years have passed, mass privatization firms have performed less well than firms privatized by other means.

Comparing firms within the mass privatization program by ownership type, we found that firms with higher levels of ownership concentration, regardless of type of ownership (state, foreign, investment funds, labor –managed) performed better than firms with dispersed ownership; thus, confirming one of the chief concerns of those who criticized mass privatization as a method that dispersed ownership would lead to poor performance. Fortunately in Bulgaria, where a large share of vouchers were collected by privatization (later investment holding companies) concentration of ownership became common place among mass privatization companies.

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